

SPACECRAFT RADIATOR SYSTEM AND METHOD USING CROSS-COUPLED DEPLOYABLE THERMAL RADIATORS

ABSTRACT

A spacecraft, along with an improved spacecraft radiator system and spacecraft heat dissipation method are disclosed. The spacecraft comprises a body, a plurality of solar arrays, and the spacecraft radiator system. The spacecraft radiator system comprises first and second opposite facing payload radiators, first and second opposite facing deployable radiators, and one or more coupling or loop heat pipes cross coupling opposite facing payload and deployable radiators so that they function in tandem. By cross-coupling the opposite facing payload and deployable radiators, one of the two radiators acting in tandem is always in the shade during solstice seasons. Consequently, the solar load processed by the radiator system is minimized, thereby, increasing the thermal dissipation capability of the radiator system by approximately 15%.